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CLAIMS

1.   Method of tuning a scheduling process for assigning
tasks (14) to resources (16) of a workforce management
5 system, the scheduling process being arranged for
calculating a work plan or work plan data (22) on the basis
of resources availability and tasks to be carried out by
said resources and as a function of predetermined
scheduling parameters (24),
10 the method being characterised in that it comprises the
following steps:
        acquiring (110) scheduling parameters data, resources
availability data and tasks data concerning tasks to be
carried out,
15   selectively modifying (120) at least a predetermined
subset of said scheduling parameters data;
        running (140) the scheduling process on the basis of
scheduling parameters, resources availability and task
data, for each modified scheduling parameters data, to
20 calculate respective work plans (40);
        acquiring target data (44) including one or more
targets which form the basis for the evaluation of work
plans;
        applying a score function (150) to each of said
25 calculated work plans (40) for calculating respective score
values representative of the degree of achievement of said
one or more targets by each calculated work plan; and
        selecting (200) the work plan to be used by said
workforce management system as the work plan being
30 attributed a score value complying with a predetermined
degree of achievement of one or more targets.

2.   A method according to claim 1, wherein the score
function (150) is selected from a plurality of functions
35 based on said target data (44).

3.   A method according to claim 1 or 2, wherein the score
function is a function operating on a subset of work plan

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data (40), and comprising the step of associating to the score function an absolute integer value belonging to a predetermined limited range of values, a first end of which represents a condition of maximum deviation from target (44), and the second end of which represents a condition of target (44) substantially achieved.

4.   A method according to claim 3, characterised in that said range of values is comprised between 0 and 100, wherein the lower limit represents a condition of maximum deviation from the target data (44), and the upper limit represents a condition of target data (44) substantially achieved, and the work plan to be used by the workforce management system is the work plan having the highest score.

5.   A method according to any of claims 1 to 4, wherein said target data (44) comprise at least one of the following targets:
- respecting appointments arranged with customers;
- increasing the volume of tasks assigned for different activity types and services;
- increasing the volume of backlog tasks assigned for different activity types and services;
- balancing the workload between resources;
- optimising resources travel time;
- achieving Service Level Agreement (SLA) for different activity types and services;
- assigning tasks to the most appropriate resource.

6.   A method according to claim 5, wherein said subset of work plan data (40) comprise data concerning resources, including at least one of the following:
        - number of resources employed by the scheduling;
        - total resource idle time;
        - total resource travelling time;
        - total number of available resources;
        - total resource working time,

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and/or data concerning tasks, including at least one of the following:

- total number of tasks assigned to resources by the algorithm;

- total number of tasks with appointment assigned to resources by the algorithm;

- total number of tasks with higher priority assigned to resources by the algorithm;

- number of tasks assigned to resources by the algorithm for different type of activities and services;

- total number of tasks that the algorithm could assign.

7.   A method according to claim 6, wherein the score function operates on the subset of work plan data (40) by comparing a first numerical value associated with a first collection of said data with at least a second numerical value associated with a second collection of said data; and the score result is comprised within a range of values extending from a lower limit corresponding to a condition of greatest distance between said first and second numerical value, to an upper limit corresponding to a condition of smallest distance or coincidence between said first and second numerical value.

8.   A method according to claim 7, wherein the score function calculates the integer of the ratio between said first numerical value and said second numerical value.

9.   A method according to claim 8, wherein, for a target of increasing the volume of tasks assigned for different activity types and services, the score function is:

$$Score = INT\left(\frac{\text{total number of tasks with higher priority assigned to resources}}{\text{total number of tasks that the algorithm could assign}}\right) \cdot 100$$

10.   A method according to claim 8, wherein, for a target of balancing the workload between resources, the score

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function is:

$$Score = INT\left(\frac{\text{number of resources employed by the scheduling}}{\text{total number of available resources}}\right)\cdot 100$$

5 11. A method according to claim 8, wherein, for a target of optimising travel time, the score function is:

$$Score = INT\left(\frac{\text{total resource working time}}{\text{total resource working time} + \text{total resource travelling time}}\right)\cdot 100$$

10 12. A method according to any preceding claim, wherein a score function is defined for calculating a respective value representative of the degree of achievement of multiple targets i, as a function F of a plurality of score functions f_i related to respective targets specified in 15 input, according to the mathematical relationship:

$$F = \begin{cases} 0 & \text{if at least a function } f_i = 0 \\ \sum_i k_i \cdot f_i & \text{otherwise} \end{cases}$$

where the overall sum of k_i is equal to 1 and each k_i 20 specifies the weight attributed to the respective target.

13. A method according to any preceding claim, wherein a score function is defined for calculating a respective value representative of the degree of achievement of 25 multiple targets i with priorities, and at least of a target j with a score not under a predetermined threshold T, as a function F' of a plurality of score functions f_i related to respective targets specified in input and said threshold, according to the mathematical relationship:

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$$F' = \begin{cases} 0 & \text{if at least a function } f_i = 0 \text{ or } f_j < T \\ \sum_i k_i \cdot f_i & \text{otherwise} \end{cases}$$

where the overall sum of k_i is equal to 1 and each k_i specifies the weight attributed to the respective priority 35 target.

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14. A method according to any preceding claim, wherein parameters, resource and task data are retrieved from a database (32) of said workforce management system.

15. A method according to any preceding claim, wherein parameters, resource and task data are retrieved from trace files (50) produced by a Work Manager Server of said workforce management system at any execution of the scheduling algorithm.

16. A method according to any preceding claim, wherein said modified subset of scheduling parameters and said target data are input by an operator of said workforce management system.

17. A method according to any preceding claim, wherein said scheduling parameters comprise data concerning the distribution of resources over geographical areas, input by an operator of said workforce management system.

18. A method according to any preceding claim, wherein the score results of said evaluation of work plans are displayed (180) to an operator as a list of calculated scores.

19. A system for tuning a task scheduling process, comprising:
        memory modules (32) for storing data concerning scheduling parameters, resources availability and tasks to be carried out;
        a user-interface module including a parameter input unit for modifying data concerning said scheduling parameters, a target input unit for establishing one or more targets (44) which form the basis for the evaluation of work plans, and a display for displaying the results of said evaluation of work plans (40); and
        a processing module (30) for calculating work plans

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(40) from said data concerning scheduling parameters, resources availability and tasks, characterised in that the system further comprises a score module (42) associated with said processing module (30) for
5 assigning a score value to said calculated work plans (40) according to a selected score function, which score value is related to the degree of achievement of said one or more targets (44).

10 20. A system according to claim 19 characterised in that said task scheduling process is applied to a telecommunications network.

21. Computer program product or computer program set to be
15 run on a computer system, comprising a code for carrying out a method of tuning a task scheduling process according to claims 1 to 18.